AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) A method for determining noise in radiography comprising::

acquiring at least two images, i-1 and i, of a same zone;

coding the acquired images into digital images that can be identified with matrices having horizontal by vertical dimensions equal to N x M, each digital image being then formed by N.M dots, each dot of an image i being identifiable by its coordinates $0 < x < N$, and $0 < y < M$, this dot then being referred to as a dot Pi(x,y), each dot Pi(x,y) then having a corresponding value v which is ~~the~~ a result of the acquisition of the image, the value v having a dynamic range from Vmin to Vmax;

dividing the dynamic range Vmax - Vmin into sub-groups defined by a lower limit Bi and an upper limit Bs, the sub-groups having a null intersection, ~~the~~ a joining of the sub-groups covering the dynamic range Vmax - Vmin, a dot of an image i then belonging to a given sub-group when Bi <= Pi(x,y) <Bs, where Pi(x,y) is the gray level of the pixel of the image i with coordinates (x,y);

computing, for at least one sub-group SG, of the ~~mean~~ standard deviation σ of the values Pi(x,y) - Pi-1(x,y);

discriminating the values Pi(x,y) of SG to keep only those values such that the criterion C : $Pi(x,y) - Pi\text{-}1(x,y) < \mu(Pi(x,y) - Pi\text{-}1(x,y)) + k.\sigma$, is met and thus, a sub-group SG' is obtained, where μ is a mean value;

applying the same computing and discriminating processing operations to the sub-group SG' as to the sub-group SG by iteration until a sub-group SG", corresponding to an end-of-iteration criterion, is obtained;

performing iterative processing operations on all the sub-groups defined in the dynamic range Vmax – Vmin and thus, for each sub-group, a ~~mean~~ standard deviation, associated with an x-axis value v = (Bi + Bs)/2, is obtained; and

performing an operation of regression on the dots obtained at the previous step to determine the coefficients α, β and γ of ~~the~~ a noise function: $\sigma(v) = \alpha.\sqrt{v} + \beta.v + \gamma$ defining the noise for a given value v.

2. (currently amended) The method according to claim 1 wherein, before the regression and after the discrimination, the method eliminates, for the remainder of the processing, ~~the~~ non-centered sub-groups, that is, the sub-groups such that the mean of the sub-group is greater than l times the ~~mean~~ standard deviation~~, l being preferably equal to 1.5~~.

3. (currently amended) The method according to claim 2 wherein the noise function is applied to the image[[s]] i to reduce the noise in this image.

4. (currently amended) The method according to claim 1 wherein the noise function is applied to the image[[s]] i to reduce the noise in this image.

5. (original) The method according to claim 1 wherein k is a non-null number.

6. (original) The method according to claim 2 wherein k is a non-null number.

7. (original) The method according to claim 3 wherein k is a non-null number.

8. (original) The method according to claim 1 wherein the end-of-iteration criterion is a number of iterations greater than 5.

9. (original) The method according to claim 2 wherein the end-of-iteration criterion is a number of iterations greater than 5.

10. (original) The method according to claim 3 wherein the end-of-iteration criterion is a number of iterations greater than 5.

11. (original) The method according to claim 5 wherein the end-of-iteration criterion is a number of iterations greater than 5.

12. (original) The method according to claim 1 wherein the end-of-iteration criterion is the fact that all the dots of SG' meet the criterion C.

13. (original) The method according to claim 2 wherein the end-of-iteration criterion is the fact that all the dots of SG' meet the criterion C.

14. (original) The method according to claim 3 wherein the end-of-iteration criterion is the fact that all the dots of SG' meet the criterion C.

15. (original) The method according to claim 5 wherein the end-of-iteration criterion is the fact that all the dots of SG' meet the criterion C.

16. (original) The method according to claim 8 wherein the end-of-iteration criterion is the fact that all the dots of SG' meet the criterion C.

17. (currently amended) The method according to claim 1 wherein:

during a first regression, first coefficients α, β and γ are obtained;

determining a first curve that separates the sub-groups into two, those whose ~~mean~~ standard deviation is above the first curve and those whose ~~mean~~ standard deviation is below the first curve;

a weighting P of less than 1 is applied to the ~~mean~~ standard deviation of the sub-groups whose ~~mean~~ standard deviation is located above the first curve;

a second regression is performed from the weighted sub-groups to obtain second coefficients α', β' and γ' determining a new noise curve; and

from the new curve, the same computing and discriminating processing operations are carried out as those performed from the first curve, ~~and so on and so forth~~ iteratively, for a number of times equal to R.

18. (currently amended) The method according to claim 2 wherein:

during a first regression, first coefficients α, β and γ are obtained;

determining a first curve that separates the sub-groups into two, those whose ~~mean~~ standard deviation is above the first curve and those whose ~~mean~~ standard deviation is below the first curve;

a weighting P of less than 1 is applied to the ~~mean~~ standard deviation of the sub-groups whose ~~mean~~ standard deviation is located above the first curve;

a second regression is performed from the weighted sub-groups to obtain second coefficients α', β' and γ' determining a new noise curve; and

from the new curve, the same computing and discriminating processing operations are carried out as those performed from the first curve, ~~and so on and so forth~~ iteratively, for a number of times equal to R.

19. (currently amended) The method according to claim 3 wherein:

during a first regression, first coefficients α, β and γ are obtained;

determining a first curve that separates the sub-groups into two, those whose ~~mean~~ standard deviation is above the first curve and those whose ~~mean~~ standard deviation is below the first curve;

a weighting P of less than 1 is applied to the ~~mean~~ standard deviation of the sub-groups whose ~~mean~~ standard deviation is located above the first curve;

a second regression is performed from the weighted sub-groups to obtain second coefficients α', β' and γ' determining a new noise curve; and

from the new curve, the same computing and discriminating processing operations are carried out as those performed from the first curve, ~~and so on and so forth~~ iteratively, for a number of times equal to R.

20. (currently amended) The method according to claim 4 wherein:

during a first regression, first coefficients α, β and γ are obtained;

determining a first curve that separates the sub-groups into two, those whose ~~mean~~ standard deviation is above the first curve and those whose ~~mean~~ standard deviation is below the first curve;

a weighting P of less than 1 is applied to the ~~mean~~ standard deviation of the sub-groups whose ~~mean~~ standard deviation is located above the first curve;

a second regression is performed from the weighted sub-groups to obtain second coefficients α', β' and γ' determining a new noise curve; and

from the new curve, the same computing and discriminating processing operations are carried out as those performed from the first curve, ~~and so on and so forth~~ iteratively, for a number of times equal to R.

21. (currently amended) The method according to claim 8 wherein:

during a first regression, first coefficients α, β and γ are obtained;

determining a first curve that separates the sub-groups into two, those whose ~~mean~~ standard deviation is above the first curve and those whose ~~mean~~ standard deviation is below the first curve;

a weighting P of less than 1 is applied to the ~~mean~~ standard deviation of the sub-groups whose ~~mean~~ standard deviation is located above the first curve;

a second regression is performed from the weighted sub-groups to obtain second coefficients α', β' and γ' determining a new noise curve; and

from the new curve, the same computing and discriminating processing operations are carried out as those performed from the first curve, ~~and so on and so forth~~ iteratively, for a number of times equal to R.

22. (currently amended) The method according to claim 12 wherein:

during a first regression, first coefficients α, β and γ are obtained;

determining a first curve that separates the sub-groups into two, those whose ~~mean~~ standard deviation is above the first curve and those whose ~~mean~~ standard deviation is below the first curve;

a weighting P of less than 1 is applied to the ~~mean~~ standard deviation of the sub-groups whose ~~mean~~ standard deviation is located above the first curve;

a second regression is performed from the weighted sub-groups to obtain second coefficients α', β' and γ' determining a new noise curve; and

from the new curve, the same computing and discriminating processing operations are carried out as those performed from the first curve, ~~and so on and so forth~~ iteratively, for a number of times equal to R.

23. (original) The method according to claim 17 wherein P is in the interval [0,75 … 0,99].

24. (original) The method according to claim 18 wherein P is in the interval [0,75 … 0,99].

25. (original) The method according to claim 19 wherein P is in the interval [0,75 … 0,99].

26. (original) The method according to claim 20 wherein P is in the interval [0,75 … 0,99].

27. (original) The method according to claim 21 wherein P is in the interval [0,75 … 0,99].

28. (original) The method according to claim 22 wherein P is in the interval [0,75 … 0,99].

29. (original) The method according to claim 23 wherein P is in the interval [0,75 … 0,99].

30. (original) The method according to claim 17 wherein P is in the interval [0 … 0,75].

31. (original) The method according to claim 18 wherein P is in the interval [0 … 0,75].

32. (original) The method according to claim 19 wherein P is in the interval [0 … 0,75].

33. (original) The method according to claim 20 wherein P is in the interval [0 … 0,75].

34. (original) The method according to claim 21 wherein P is in the interval [0 … 0,75].

35. (original) The method according to claim 22 wherein P is in the interval [0 … 0,75].

36. (original) The method according to claim 23 wherein P is in the interval [0 … 0,75].

37. (original) The method according to claim 17 wherein R is in the interval [3 … 10].

38. (original) The method according to claim 18 wherein R is in the interval [3 … 10].

39. (original) The method according to claim 19 wherein R is in the interval [3 … 10].

40. (original) The method according to claim 20 wherein R is in the interval [3 … 10].

41. (original) The method according to claim 21 wherein R is in the interval [3 … 10].

42. (original) The method according to claim 22 wherein R is in the interval [3 … 10].

43. (original) The method according to claim 23 wherein R is in the interval [3 … 10].

44. (original) The method according to claims 17 wherein R is greater than 10.

45. (original) The method according to claims 18 wherein R is greater than 10.

46. (original) The method according to claims 19 wherein R is greater than 10.

47. (original) The method according to claims 20 wherein R is greater than 10.

48. (original) The method according to claims 21 wherein R is greater than 10.

49. (original) The method according to claims 22 wherein R is greater than 10.

50. (original) The method according to claims 23 wherein R is greater than 10.

51. (currently amended) A computer program comprising program code means for implementing steps of a method, when the program runs on a computer, wherein the program code means comprises:

computer readable program code means for causing a computer to provide for acquiring at least two images, i-1 and i, of a same zone;

computer readable program code means for causing a computer to provide for coding the acquired images into digital images that can be identified with matrices having

horizontal by vertical dimensions equal to N x M, each digital image being then formed by N.M dots, each dot of an image i being identifiable by its coordinates $0 < x < N$, and $0 < y < M$, this dot then being referred to as a dot Pi(x,y), each dot Pi(x,y) then having a corresponding value v which is the result of the acquisition of the image, the value v having a dynamic range from Vmin to Vmax;

computer readable program code means for causing a computer to provide for dividing the dynamic range Vmax - Vmin into sub-groups defined by a lower limit Bi and an upper limit Bs, the sub-groups having a null intersection, the joining of the sub-groups covering the dynamic range Vmax - Vmin, a dot of an image i then belonging to a given sub-group when Bi <= Pi(x,y) <Bs, where Pi(x,y) is the gray level of the pixel of the image i with coordinates (x,y);

computer readable program code means for causing a computer to provide for computing, for at least one sub-group SG, of the ~~mean~~ standard deviation σ of the values Pi(x,y) - Pi-1(x,y);

computer readable program code means for causing a computer to provide for discriminating the values Pi(x,y) of SG to keep only those values such that the criterion C : Pi(x,y) - Pi-1(x,y) < μ(Pi(x,y) - Pi-1(x,y)) + k.σ, is met and thus, a sub-group SG' is obtained, where μ is a mean value;

computer readable program code means for causing a computer to provide for applying the same computing and discriminating processing operations to the sub-group SG' as to the sub-group SG by iteration until a sub-group SG", corresponding to an end-of-iteration criterion, is obtained;

computer readable program code means for causing a computer to provide for performing iterative processing operations on all the sub-groups defined in the dynamic range Vmax – Vmin and thus, for each sub-group, a ~~mean~~ standard deviation, associated with an x-axis value v = (Bi + Bs)/2, is obtained; and

computer readable program code means for causing a computer to provide for performing an operation of regression on the dots obtained at the previous step to

determine the coefficients α, β and γ of the noise function: $\sigma(v) = \alpha.\sqrt{v} + \beta.v + \gamma$ defining the noise for a given value v.

52. (currently amended) A computer program product comprising a computer useable medium having computer readable program code means embodied in the medium, the computer readable program code means implementing steps of a method, wherein the computer readable program code means comprises:

computer readable program code means embodied in a medium for causing a computer to provide for acquiring at least two images, i-1 and i, of a same zone;

computer readable program code means embodied in a medium for causing a computer to provide for coding the acquired images into digital images that can be identified with matrices having horizontal by vertical dimensions equal to N x M, each digital image being then formed by N.M dots, each dot of an image i being identifiable by its coordinates $0 < x < N$, and $0 < y < M$, this dot then being referred to as a dot Pi(x,y), each dot Pi(x,y) then having a corresponding value v which is the result of the acquisition of the image, the value v having a dynamic range from Vmin to Vmax;

computer readable program code means embodied in a medium for causing a computer to provide for dividing the dynamic range Vmax - Vmin into sub-groups defined by a lower limit Bi and an upper limit Bs, the sub-groups having a null intersection, the joining of the sub-groups covering the dynamic range Vmax - Vmin, a dot of an image i then belonging to a given sub-group when Bi <= Pi(x,y) <Bs, where Pi(x,y) is the gray level of the pixel of the image i with coordinates (x,y);

computer readable program code means embodied in a medium for causing a computer to provide for computing, for at least one sub-group SG, of the ~~mean~~ standard deviation σ of the values Pi(x,y) - Pi-1(x,y);

computer readable program code means embodied in a medium for causing a computer to provide for discriminating the values Pi(x,y) of SG to keep only those values such that the criterion C : $Pi(x,y) - Pi\text{-}1(x,y) < \mu(Pi(x,y) - Pi\text{-}1(x,y)) + k.\sigma$, is met and thus, a sub-group SG' is obtained, where μ is a mean value;

computer readable program code means embodied in a medium for causing a computer to provide for applying the same computing and discriminating processing operations to the sub-group SG' as to the sub-group SG by iteration until a sub-group SG", corresponding to an end-of-iteration criterion, is obtained;

computer readable program code means embodied in a medium for causing a computer to provide for performing iterative processing operations on all the sub-groups defined in the dynamic range Vmax – Vmin and thus, for each sub-group, a ~~mean~~ standard deviation, associated with an x-axis value $v = (Bi + Bs)/2$, is obtained; and

computer readable program code means embodied in a medium for causing a computer to provide for performing an operation of regression on the dots obtained at the previous step to determine the coefficients α, β and γ of the noise function: $\sigma(v) = \alpha.\sqrt{v} + \beta.v + \gamma$ defining the noise for a given value v.

53. (currently amended) An article of manufacture for use with a computer system, the article of manufacture comprising a computer readable medium having computer readable program code means embodied in the medium, the program code means implementing steps of a method, the program code means comprising:

computer readable program code means embodied in a medium for causing a computer to provide for acquiring at least two images, i-1 and i, of a same zone;

computer readable program code means embodied in a medium for causing a computer to provide for coding the acquired images into digital images that can be identified with matrices having horizontal by vertical dimensions equal to N x M, each digital image being then formed by N.M dots, each dot of an image i being identifiable by its coordinates $0 < x < N$, and $0 < y < M$, this dot then being referred to as a dot Pi(x,y), each dot Pi(x,y) then having a corresponding value v which is the result of the acquisition of the image, the value v having a dynamic range from Vmin to Vmax;

computer readable program code means embodied in a medium for causing a computer to provide for dividing the dynamic range Vmax - Vmin into sub-groups defined by a lower limit Bi and an upper limit Bs, the sub-groups having a null

intersection, the joining of the sub-groups covering the dynamic range Vmax - Vmin, a dot of an image i then belonging to a given sub-group when Bi <= Pi(x,y) <Bs, where Pi(x,y) is the gray level of the pixel of the image i with coordinates (x,y);

computer readable program code means embodied in a medium for causing a computer to provide for computing, for at least one sub-group SG, of the ~~mean~~ standard deviation σ of the values Pi(x,y) - Pi-1(x,y);

computer readable program code means embodied in a medium for causing a computer to provide for discriminating the values Pi(x,y) of SG to keep only those values such that the criterion C : Pi(x,y) - Pi-1(x,y) < μ(Pi(x,y) - Pi-1(x,y)) + k.σ, is met and thus, a sub-group SG' is obtained, where μ is a mean value;

computer readable program code means embodied in a medium for causing a computer to provide for applying the same processing operations to the sub-group SG' as to the sub-group SG by iteration until a sub-group SG", corresponding to an end-of-iteration criterion, is obtained;

computer readable program code means embodied in a medium for causing a computer to provide for performing iterative processing operations on all the sub-groups defined in the dynamic range Vmax – Vmin and thus, for each sub-group, a ~~mean~~ standard deviation, associated with an x-axis value v = (Bi + Bs)/2, is obtained; and

computer readable program code means embodied in a medium for causing a computer to provide for performing an operation of regression on the dots obtained at the previous step to determine the coefficients α, β and γ of the noise function: $\sigma(v) = \alpha.\sqrt{v} + \beta.v + \gamma$ defining the noise for a given value v.

54. (currently amended) A program storage device readable by a machine tangibly embodying a program of instructions executable by the machine to perform steps of a method comprising:

the program of instructions embodied in a medium for causing the machine to provide for acquiring at least two images, i-1 and i, of a same zone;

the program of instructions embodied in a medium for causing the machine to provide for coding the acquired images into digital images that can be identified with matrices having horizontal by vertical dimensions equal to N x M, each digital image being then formed by N.M dots, each dot of an image i being identifiable by its coordinates $0 < x < N$, and $0 < y < M$, this dot then being referred to as a dot Pi(x,y), each dot Pi(x,y) then having a corresponding value v which is the result of the acquisition of the image, the value v having a dynamic range from Vmin to Vmax;

the program of instructions embodied in a medium for causing the machine to provide for dividing the dynamic range Vmax - Vmin into sub-groups defined by a lower limit Bi and an upper limit Bs, the sub-groups having a null intersection, the joining of the sub-groups covering the dynamic range Vmax - Vmin, a dot of an image i then belonging to a given sub-group when Bi <= Pi(x,y) <Bs, where Pi(x,y) is the gray level of the pixel of the image i with coordinates (x,y);

the program of instructions embodied in a medium for causing the machine to provide for computing, for at least one sub-group SG, of the ~~mean~~ standard deviation σ of the values Pi(x,y) - Pi-1(x,y);

the program of instructions embodied in a medium for causing the machine to provide for discriminating the values Pi(x,y) of SG to keep only those values such that the criterion C : Pi(x,y) - Pi-1(x,y) < μ(Pi(x,y) - Pi-1(x,y)) + k.σ, is met and thus, a sub-group SG' is obtained, where μ is a mean value;

the program of instructions embodied in a medium for causing the machine to provide for applying the same <u>computing and discriminating</u> processing operations to the sub-group SG' as to the sub-group SG by iteration until a sub-group SG", corresponding to an end-of-iteration criterion, is obtained;

the program of instructions embodied in a medium for causing the machine to provide for performing iterative processing operations on all the sub-groups defined in the dynamic range Vmax – Vmin and thus, for each sub-group, a ~~mean~~ standard deviation, associated with an x-axis value v = (Bi + Bs)/2, is obtained; and

the program of instructions embodied in a medium for causing the machine to provide for performing an operation of regression on the dots obtained at the previous step to determine the coefficients α, β and γ of the noise function: $\sigma(v) = \alpha.\sqrt{v} + \beta.v + \gamma$ defining the noise for a given value v.